Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Public Safety and Homeland Security	)	
Bureau Seeks Comment on Petitions	)	PS Docket No. 06-229
For Waiver To Deploy 700 MHz	)	
Public Safety Broadband Networks	)	

To: The Commission

COMMENTS OF HARRIS CORPORATION

October 18, 2010

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EXECUTIVE SUMMARY

Harris supports continuing to grant 700 MHz waivers to deploy public safety broadband networks ("PSBN") on a case by case basis, so long as waivers are granted in accordance with the Federal Communications Commission's ("Commission") waiver rules, the interpretation of those rules set forth in the Commission's *Waiver Order*, and any future rules adopted by the Commission or the Emergency Response Interoperability Center ("ERIC"). Harris does not believe that the number of waivers should be limited or restricted. However, the waiver process would greatly benefit from the implementation of additional organizational processes, such as the establishment of timeframes or timelines for the various stages of the waiver process.

Harris also supports the coordination certification process established by the Commission in its *Waiver Order* for addressing overlapping waiver grants. While in its *Waiver Order* the Commission stated a preference for state level waivers, the Commission should not preclude other local or regional public safety entities—and non-public safety government and quasi governmental partners—with viable deployment plans from submitting waiver requests and having those requests granted. The Commission should not reject any waiver requests without full consideration of the facts presented in the Petition.

The Commission should permit waiver grantees the discretion to determine what non-public safety government and quasi government entities, which are acting in furtherance of public safety's mission, should be provided access to PSBNs on a secondary basis. While first responders should remain the primary users and "licensees" of the spectrum, discretion should be provided to the first responder community to determine what other government and quasi government entities should be permitted access to newly deployed 700 MHz public safety broadband networks. A flexible interpretation of Section 337(f), as is being recommended by

Harris, is consistent with the Commission's findings in other proceedings including: (1) the 700 MHz proceeding; (2) the National Broadband Plan; and (3) the 4.9 GHz proceeding.

Regardless of the amount of spectrum that is allocated to public safety for the deployment of the nationwide PSBN—10 MHz or 20 MHz—the Commission must begin the process of establishing final governance and operational rules. In order to alleviate the concerns over the number of PLMN IDs the Commission, through ERIC, should establish a regional governance structure for the roaming portion of the LTE core. It is Harris' view that the logical regional governance entity for this "regional core" should be the states. In addition, the Commission should encourage the build-out of 700MHz radio access networks (RANs) by allowing for regional entities to utilize distributed data transport core(s) that may be connected to the regional interoperability core for the purpose of nationwide roaming. The Commission should define a single interoperability architecture, at the state level, and each state should be required to ensure that local or regional networks built-out within that state satisfy the uniform interoperability architecture. In order to ensure such coordination takes place the Commission should require waiver grantees receiving a certification under the geographic coordination process commit to complying with future state interoperability architectures and demonstrate in their Interoperability Showing how compliance will occur.

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COMMENTS OF HARRIS CORPORATION

This comment is submitted on behalf of Harris Corporation ("Harris") before the Federal Communications Commission in response to a Public Notice[1] issued by the Public Safety and Homeland Security Bureau seeking comment on 23 Petitions for Waiver (hereinafter "Petitioners") to deploy 700 MHz public safety broadband networks (hereinafter "PSBN"). Harris is an international communications and information technology company serving government and commercial markets in more than 150 countries. Harris is a leading technology developer and manufacturer of mission-critical wireless communications for the public safety communications market with more than 500 critical communications systems deployed world-wide. As a pioneer in the development of IP based networks for private radio and broadband applications, Harris supplies industry-leading brands such as VIDA Broadband™, EDACS®, OpenSky®, NetworkFirst™, and Provoice™. In addition, Harris now offers first responders full-spectrum multiband products for joint public safety operations on the local, state, and federal

[1] *See* Public Safety and Homeland Security Bureau Seeks Comment on Petitions for Waiver to Deploy 700 MHz Public Safety Broadband Networks, Public Notice, DA 10-1748, (rel. Sep. 15, 2010). *See also* Public Safety and Homeland Security Bureau Seeks Comment on Additional Petitions for Waiver to Deploy 700 MHz Public Safety Broadband Network, Public Notice, DA 10-1796, (rel. Sep. 22, 2010).

levels: the Harris Unity™ XG-100 and RF-1033M. Harris is also an active member of numerous standards and technical committees including the TR-8 Mobile and Personal Private Radio Committee of the Telecommunications Industry Association.

Harris continues to support granting Petitions for Waiver to deploy PSBNs on a case by case basis, so long as waivers are granted in accordance with the Commission's waiver rules,[2] the interpretation of those rules set forth in the Commission's *Waiver Order,* and any subsequent rules adopted by the Commission or the Emergency Response Interoperability Center ("ERIC"). In particular, the Commission should continue to use the requirements established in *Waiver Order* that require overlapping geographic entities to coordinate with one another and that smaller jurisdictions seek to coordinate with the state before pursuing deployment. The scope of network access should be interpreted more broadly than in the *Waiver Order*. Public safety users should have the ability to determine what government (*i.e.,* Departments of Transportation, Transportation Authorities, and state owned utilities) and quasi-government organizations (*i.e.,* private utilities, private educational institutions, and private transit entities), which may support the mission of public safety, should be provided access to PSBNs on a secondary basis. Even with the policies established by the *Waiver Order*, Harris believes there is an immediate need for the Commission, working with ERIC, to move forward with a proceeding establishing a notional nationwide architecture that addresses how the nationwide PSBN will operate and be governed.

I. The Commission Should Continue to Accept, Evaluate, and Grant Petitions for Waiver for Early Deployment in the 700 MHz Public Safety Broadband Spectrum.

The Commission should continue to evaluate, accept, and grant Petitions for Waiver to deploy in the 700 MHz public safety broadband spectrum and should not restrict the submission

[2] 47 C.F.R. §§ 1.925(b)(3)(i-ii).

of new Petitions for Waiver based on jurisdictional size. Petitions for Waiver should be granted on a case by case basis, so long as waivers meet the requirements of Commission's waiver rules[3] the interpretation of those rules set forth in the Commission's *Waiver Order,*[4] and any terms or conditions established by the Commission or ERIC in the future. At this time Harris does not believe that the number of waivers should be limited or restricted. However, the waiver process would greatly benefit from the implementation of additional organizational processes, namely the establishment of timeframes or timelines for the various stages of the waiver process. For example, the Commission could establish filing windows for entities to submit Petitions for Waiver and establish target timelines for Commission action once Petitions for Waiver are submitted. Filing windows and application timelines could be planned in coordination with the Commission's goals for moving forward on establishing final rules for a nationwide PSBN, which should also be made public. Harris would recommend that filing windows be laid out at least one window in advance of the current filing window.

II. The Commission Should Continue to Use the Mechanism Established in Its *Waiver Order* For Resolving Any Geographic Conflicts with Respect to New and Existing Waiver Grants.

Harris supports the Commission's geographic certification coordination process established by the *Waiver Order* for coordinating overlapping geographic areas.[5] The Commission must continue to promote coordination between waiver grantees, especially in overlapping geographic areas and between smaller jurisdictions and states. Requiring such coordination will ensure interoperability is possible once final rules for the nationwide PSBN are

[3] 47 C.F.R. §§ 1.925(b)(3)(i-ii).

[4] *See* Requests for Waiver of Various Petitioners to allow the Establishment of 700 MHz Interoperable Public Safety Wireless Broadband Networks, *Order*, PS Docket 06-229, 25 Rcd. 5145 (rel. May 12, 2010) ("*Waiver Order*") (granting 21 waivers for early deployment in the 700 MHz public safety broadband spectrum and establishing rules for deployment).

[5] Id., at 5161-5163, ¶ 49-53.

adopted. Harris agrees that requiring geographic coordination to take place on the state level is the most efficient way to ensure 700 MHz public safety deployments are coordinated under the waiver process, however, jurisdictions smaller than states should continue to be eligible to apply for and be granted waivers for early deployment. While in its *Waiver Order* the Commission stated a preference for state level waivers,[6] the Commission should not preclude other local or regional public safety entities with the motivation and funding to deploy a network from submitting waiver requests and having their request evaluated in accordance with the Commission's *Waiver Order*.

The Commission must keep in mind that in some cases deployment in the 700 MHz public safety broadband spectrum may be more appropriate on a regional, countywide or citywide basis, rather than on a statewide basis. Determining the appropriate level of geographic deployment will largely depend upon the region and local public safety entities' needs. Regardless of how the 700 MHz public safety spectrum band is licensed, the Commission must ensure that any rules it adopts provide sufficient levels of operational flexibility in order to account for the unique needs and requirements of individual public safety entities. Therefore, the Commission should clarify that the purpose of the geographic coordination process is to ensure interoperability and uniform network governance moving forward and not to restrict non-state level waiver entities autonomy with regards to their network use, build-out, and operation.

[6] "We conclude that waivers for early deployment should meet certain criteria for geographic scope of the proposed deployment. For several reasons, we believe that states provide the most appropriate geographic size for consideration of waiver relief." Id., at 5151, ¶ 50.

III. The Commission Should Permit Waiver Grantees Discretion to Allow Government and Quasi-Government Entities that Support Public Safety's Mission Access to Their 700 MHz Public Safety Broadband Networks.

Pursuant to Section 337(f) of the Communications Act of 1934,[7] the Commission should permit waiver grantees discretion to provide access to PSBNs for users and entities that support public safety's mission. While first responders should remain the primary users and "licensees" of the spectrum, discretion should be provided to the first responder community to determine what other government and quasi-government organizations would advance the mission of public safety and should be permitted to access newly deployed PSBNs on a secondary basis. Harris does not agree with the Commission's restrictive definition of network access adopted in the *Waiver Order.*[8] The Commission's definition limits the establishment of beneficial partnerships for public safety and their ability to work with other government and quasi government entities to protect the safety of life, health, and property.

The Commission chose to limit network access under the *Waiver Order* because it felt that the issue could be addressed in the "larger rulemaking proceeding"[9] and that "deferral of consideration of this issue will not otherwise impair the Petitioners' early deployment plans."[10] While this might have been an accurate conclusion based on the Petitions for Waiver before the Commission at the time of the *Waiver Order*, subsequently many of the Petitions for Waiver have been submitted that include dynamic partnerships. New waiver deployments, which will

[7] 47 U.S.C. § 337(f); *see also* 47 C.F.R. 90.523.

[8] In the Commission's *Waiver Order* the Commission chose to adopt its tentative conclusion's set forth in the Third Further Notice of Proposed Rulemaking and "limit the use of the 700 MHz spectrum to entities whose 'sole or principal purpose' is 'to protect the safety of life, health, or property' and who meet the remaining requirements of Section 337(f)." *Waiver Order*, *supra* note 6, at 5155, ¶ 34; *See* Service rules for the 698-746, 747-762 and 777-792 MHz Bands; Implementing a Nationwide, Broadband Interoperable Public Safety Network in the 700 MHz Band, *Third Notice of Proposed Rulemaking*, WT Docket No. 06-150; PS Docket No. 06-229, 23 FCC Rcd. 14301, 14404-14407 ¶¶ 322-327 (rel. Sept. 25, 2010) ("Third FNPRM").

[9] *Waiver Order*, *supra* note 8.

[10] Id.

ultimately benefit the public interest, would be impaired without the ability to allow non-public safety government and quasi-government entities access to PSBNs.

Forcing public safety entities to deploy on their own, without the assistance of non-public safety government and quasi-government entities that frequently assist in supporting the mission of public safety, will likely increase deployment costs, reduce the ability to leverage shared infrastructure, and lessen the likelihood of deployment occurring. Harris recommends that the Commission modify its restrictive interpretation of network access adopted under the *Waiver Order* and adopt a more flexible interpretation of Section 337(f) that provides greater discretion to public safety waiver grantees to determine what government and quasi government entities should have access to their PSBNs on a secondary basis. A flexible interpretation of Section 337(f) is consistent with the Commission's findings in the following proceedings: (1) the 700 MHz proceeding; (2) the National Broadband Plan; and (3) the 4.9 GHz proceeding.

1. 700 MHz Proceeding

Prior to the Commission's narrower interpretation of network access adopted in the *700 MHz Third Further Notice of Proposed Rulemaking* ("*Third FNPRM*"),[11] the Commission had a broader view of network access in the 700 MHz public safety spectrum band. For example, in the Commission's *700 MHz Second Further Notice of Proposed Rulemaking* the Commission noted that "pursuant to the statutory definition, a service can still be considered a "public safety service" even if its purpose is not solely for protecting the safety of life, health or property, so long as this remains its principal purpose."[12] In addition, the Commission's interpretation of Section 337(f) supported providing public safety with discretion to determine who should be

[11] *Third FNPRM*, *supra* note 9.

[12] Service rules for the 698-746, 747-762 and 777-792 MHz Bands; Implementing a Nationwide, Broadband Interoperable Public Safety Network in the 700 MHz Band, *Second Further Notice of Proposed Rulemaking*, WT Docket No. 06-150, PS Docket No. 06-229, 23 FCC Rcd. 8047, 8061 ¶ 30 (rel. May 14, 2008).

given access to PSBNs. Given the importance of the 700 MHz spectrum allocation to public safety and finite amount of spectrum, the Commission believed that it was "unlikely that the intended scope of authorization from such governmental entity or entities would include providing spectrum access, even on an occasional or limited basis, to entities that do not provide public safety services."[13]

While during the course of the 700 MHz proceeding the Commission deviated from its earlier interpretations of Section 337(f) outlined above, the conclusions made in the *Third FNPRM* were only tentative, and the Commission can still and should change direction. The circumstances under which the Commission made its tentative conclusions in the *Third FNPRM* have changed dramatically. From a policy perspective the Commission, as a result of the National Broadband Plan, has been attempting to find ways to most effectively leverage existing resources (both spectrum and infrastructure) to provide broadband access not only to consumers, but in support of numerous societal benefits including public safety, smart grid, and healthcare. As a result of the economic downturn local and state governments, including public safety departments, are cash and resource strapped. Pooling resources to advance important public works projects, such as the deployment of a PSBN, have become an important tool in moving vital projects of great public interest forward. The Commission's conclusions in the 700 MHz proceeding regarding network access to public safety broadband spectrum prior to the *Third FNPRM* are more appropriate today based on the current set of circumstances that waiver grantees and Petitioners find themselves, than the Commission's tentative conclusions in the *Third FNPRM*.

[13] Id., at ¶ 32.

2. National Broadband Plan

In the National Broadband Plan the Commission advocated for providing public safety entities discretion to determine whether to provide non-public safety partners use of the 700 MHz public safety spectrum on a preemptable, secondary basis through leasing or similar mechanisms.[14] In particular, the Commission supported providing utilities access to public safety broadband networks for mission critical communications.[15] The Commission recognized the importance of providing partners, such as critical infrastructure users, access to the 700 MHz public safety spectrum as their work is critical to supporting first responders and will ultimately benefit homeland security and public safety.[16]

Harris agrees with the recommendations the Commission made in the National Broadband Plan providing public safety broadband network access, on a secondary basis, to critical infrastructure providers.[17] Harris also agrees with the Commission that any revenue received by a public safety entity as a result of spectrum access agreements should be used to build or improve the public safety broadband network.[18] Ultimately, providing public safety entities the opportunity to work with non-public safety governmental and quasi-governmental partners, such as both state owned and private utilities, will help reduce deployment costs and provide the opportunity to leverage the infrastructure of non public safety partners for public safety use. Cost reduction through leveraging infrastructure is a key aspect of the Commission's

[14] Report to Congress, A National Broadband Plan for Our Future, Federal Communications Commission, pg. 315 (rel. Mar. 16, 2009).

[15] Id., at 269.

[16] Id., at 269-271

[17] Id., at 314.

[18] Id., at 315.

National Broadband Plan proposal for deploying a nationwide PSBN.[19] The Commission could support this proposal by providing waiver grantees the opportunity to partner with and provide spectrum access, on a secondary basis, to non-public safety government and quasi-government organizations.

3. 4.9 GHz Band

The 4.9 GHz band is another example of where the Commission has implemented a flexible approach to public safety spectrum access under Section 337(f) of the Act. In the 4.9 GHz band proceeding, the Commission based its spectrum access rules on the definition of public safety services laid out under Section 337(f) of the Act.[20] In establishing final rules for the band, the Commission stated that access to the 4.9 GHz spectrum should be "sufficiently flexible to provide a variety of entities access to the 4.9 GHz band, particularly if allowing such entities access would increase the effectiveness of public safety communications, foster interoperability and further ongoing and future homeland security initiatives."[21] The Commission determined that "permitting 4.9 GHz licensees to enter into sharing arrangements with entities not eligible for their own license is in the public interest."[22] The Commission went on to state that it would not impose limitations on the type of specific entities that would be eligible to enter in to sharing agreements and would instead "afford traditional public safety

[19] Id., at 271 and 316.

[20] *See* In the Matter of The 4.9 GHz Band Transferred from Federal Government Use, *Memorandum Opinion and Order and Third Report and Order*, WT Docket No. 00-32 *18 FCC Rcd 9152* 9158-9163, ¶¶ 15-25(rel. Apr. 23, 2010) ("4.9 GHz Third Report").

[21] Id., at 9158, ¶ 16; "As the Commission has noted previously in a separate proceeding, although the primary function of certain organizations, such as the power, petroleum, and railroad industries, 'is not necessarily to provide public safety services, the nature of their day-to-day operations provides little or no margin for error and in emergencies they can take on an almost quasi-public safety function. Any failure in their ability to communicate by radio could have severe consequences on the public welfare.'" Id., at 9162, ¶ 22, *citing*, Implementation of Sections 309(j) and 337 of the Communications Act of 1934, as Amended, *Report and Order and Further Notice of Proposed Rulemaking*, WT Docket No. 99-87, 15 FCC Rcd 22709, 22746 ¶ 76 (rel. Nov. 20, 2000).

[22] Id., at 9162, ¶ 22.

providers that are licensed in the 4.9 GHz band flexibility to exercise their discretion regarding what entities in their jurisdiction operation in support of public safety."[23]

While use of the 4.9 GHz public safety spectrum for commercial use is strictly prohibited, under the noncommercial *proviso* of Section 337(f) the Commission has realized that commercial entities, such as private utlities, should not be disqualified from utilizing the spectrum *per se* as a result of their commercial status.[24] However, under the noncommercial *proviso* commercial entities are not eligible for licensing or use of the spectrum if the services they are providing are "[made] commercially available to the public, including the provision of public safety radio service to public safety subscribers for a fee."[25] Examples of prohibited commercial entities would likely include commercial network providers that sometimes carry public safety communications over their network.

Access to 4.9 GHz public safety spectrum by non-public safety entities[26] was made contingent by the Commission on the establishment of written sharing agreements and that communications would be "in support of public safety."[27] The Commission, rightfully, did not attempt to categorize "public safety" versus "non-public safety" entities because the Commission

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[23] Id.

[24] "For example, a commercial utility company, with appropriate governmental authorization, is eligible to hold licenses for spectrum in the 700 MHz band for use when it provides services to protect the safety of life, health or property that it does not make commercially available to the public." The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010, *First Report and Order and Third Notice of Proposed Rulemaking*, WT Docket No. 96-86, 14 FCC Rcd 152, 188 ¶ 72 (1998).

[25] *4.9 GHz Third Report*, *supra* note 23, at 9159, ¶ 17.

[26] Although commercial use of the 4.9 GHz band is prohibited, private companies supporting public safety agencies with critical infrastructure can negotiate sharing agreements with sponsoring government agencies if such use is for the purpose of protecting life, health, and property. For example, based on an examination of 4.9 GHz licenses entities that have been granted a 4.9 GHz license include Transportation Authorities; Police Departments; Fire Departments; Offices of Emergency Management; Emergency Dispatch and Operations; Airport Authorities; Courts; Electric, Water, and Sewage Authorities; Emergency Medical Services; and Port/River Authorities.

[27] 4.*9 GHz Third Report*, *supra* note 25, at 9162, ¶ 22.

believed that (1) "a bright line distinction would be difficult to draw and might unduly inhibit the use of the subject spectrum that could benefit the public welfare"[28] and (2) "that traditional public safety licensees will be in the best position to determine whether certain sharing arrangements would benefit their public safety communications."[29] The Commission's actions in the 4.9 GHz proceeding recognized the importance of providing public safety the opportunity to explore strategic partnerships so long as such arrangements were to enhance public safety's mission and utilized on a secondary basis. [30] The Commission's actions in the 4.9 GHz proceeding regarding network access should be replicated in the 700 MHz public safety spectrum band.

Harris believes that in the 4.9 GHz band the ability to create flexible spectrum access arrangements for the purpose of advancing public safety communications has been extremely beneficial to supporting the mission of the public safety community and compliant with Section 337(f) of the Act. While the licensing approaches of the 4.9 GHz and 700 MHz band are very different, the public interest benefit provided by flexible spectrum access rules are the same. It would be in the public interest for waiver grantees in the 700 MHz public safety band to be subject to a similar interpretation of Section 337(f) of the Act as the Commission provided in the 4.9 GHz band.

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[28] Id., at 9162-9163, ¶ 23.

[29] Id., at 9163, ¶ 23.

[30] "We recognize that some of the public safety entities covered by Section 309(j)(2) of the Act, whose facilities may be directly involved in an emergency, and who provide essential services to the public at large, may also be interested in utilizing the 4.9 GHz band. The very nature of the services provided by these entities involve potential hazards whereby reliable radio communications is an essential tool in either avoiding the occurrence of such hazards, or responding to emergency circumstances. Furthermore, such entities need reliable communications in order to prevent or respond to disasters or crises affecting their service to the public. We also recognize that in the course of their duties, these entities will need to interact with the traditional public safety service providers, and the inability to do so may affect the ability of both groups of public safety entities to fulfill their missions." The 4.9 GHz Band Transferred from Federal Government Use, *Second Report and Order and Further Notice of Proposed Rule Making*, WT Docket No. 00-32, 17 FCC Rcd 3955, 3931 ¶ 33 (rel. Feb. 27, 2002).

Given the Commission's previous interpretation of Section 337(f) in the 700 MHz proceeding and 4.9 GHz proceeding, coupled with the Commission's recommendations in the National Broadband Plan, it would be appropriate for non public safety government and quasi government organizations, whose goal it is to advance the mission of public safety, to have secondary access to PSBNs contingent on public safety's approval. Failing to reevaluate and modify the Commission's determination in its *Wavier Order* that limits the scope of network access would detrimentally impair many Petitioners' pending Petition Waivers and laudable PSBN deployment plans.

IV. The Commission Should Define a Single Interoperability Architecture to Ensure Interoperability Across the Nationwide Public Safety Broadband Network.

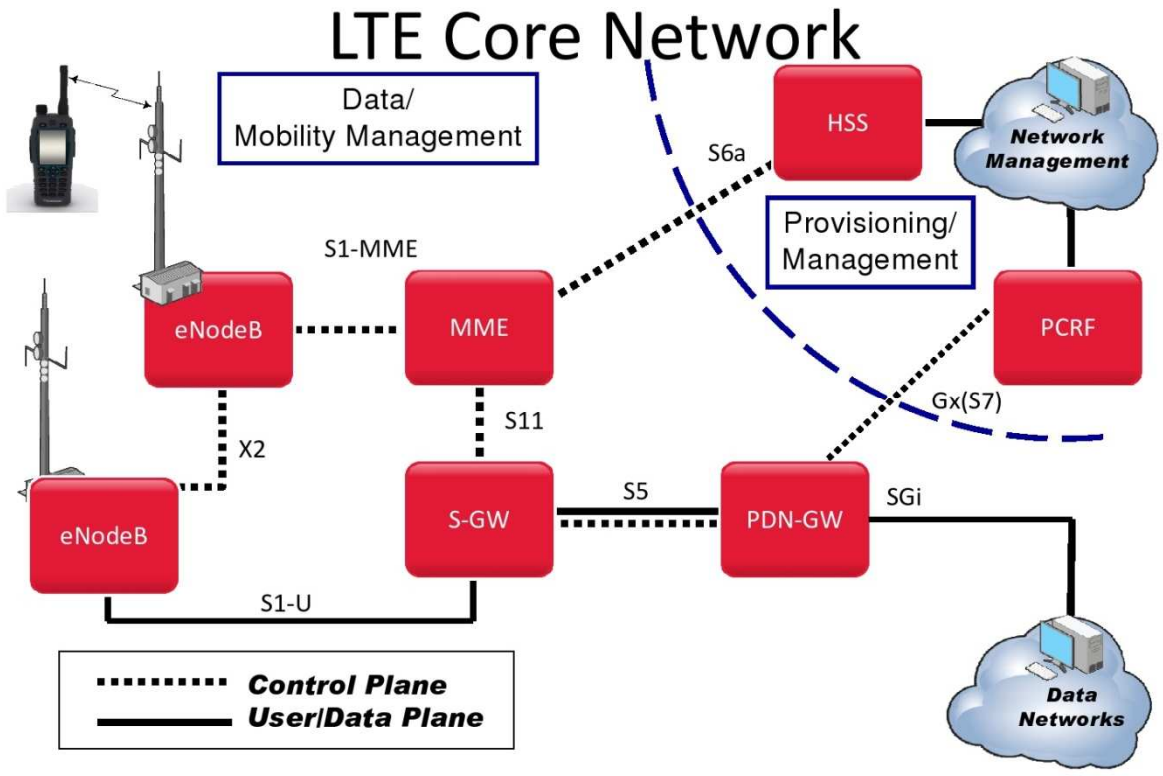
Regardless of the amount of spectrum that is allocated to public safety for the deployment of the PSBN—10 MHz or 20 MHz—the Commission must begin the process of establishing final governance and operational rules for the nationwide PSBN. There is an immediate need for a notional architecture that addresses how the nationwide PSBN will operate and be governed. However, there is also an immediate need for public safety entities to deploy broadband solutions to support their public safety mission, as is evidenced by the 47 waiver requests (and counting) that have been submitted to the Commission, as of the date of this Comment. Harris recommends that the Commission designate the states as the regional entities that have the role of coordinating the interoperability of the 700MHz spectrum within their individual state and between states. As previously stated in these Comments, Harris also recommends that the Commission continue to grant regional waiver licenses, under the caveat that these regional entities coordinate with their state for interoperability purposes, and commit to meeting final Commission and ERIC requirements.

The Commission has expressed concern over the number of Long Term Evolution ("LTE") "Cores" and subsequent Public Land Mobile Network ("PLMN") IDs, as a large number of disparate size cores may overly complicate nationwide roaming. In order to alleviate the concerns over the number of PLMN IDs the Commission, through ERIC, should establish a regional governance structure for the roaming portion of the LTE core with a fixed number of PLMN ID's. It is Harris' view that the logical regional governance entity for this "regional core" should be a state. In addition, the Commission should encourage the build-out of 700MHz radio access networks ("RAN") by allowing for regional entities to utilize distributed data transport core(s) that may be connected to the regional interoperability core for the purpose of nationwide roaming. Harris believes that the Commission should not dictate specific system architectures for each local, state or regional network and should allow for flexibility in the build-out of local networks. However, Harris believes that the Commission should define a single interoperability architecture, at the state level. Each state should be responsible for ensuring that local or regional networks built-out within that state satisfy the uniform statewide interoperability architecture. Therefore, it would be appropriate for the Commission to require that waiver grantees receiving a certification under the geographic coordination process commit to complying with the future state interoperability architecture and demonstrate in their Interoperability Showing how compliance will occur.

In general, the evolved packet core ("EPC") of the LTE network is considered as a single entity and is often referred to as the "Core". The Commission is right to be concerned about the number of cores that may proliferate in a nationwide network, and the method for managing interoperability in a nationwide network built from these cores. However, the LTE EPC is actually constructed from two logical entities, which for the purposes of discussion, may be

referred to as the "Provisioning/Management Core" and the "Data Transport/Mobility Management Core," as illustrated in Diagram 1.

Diagram 1



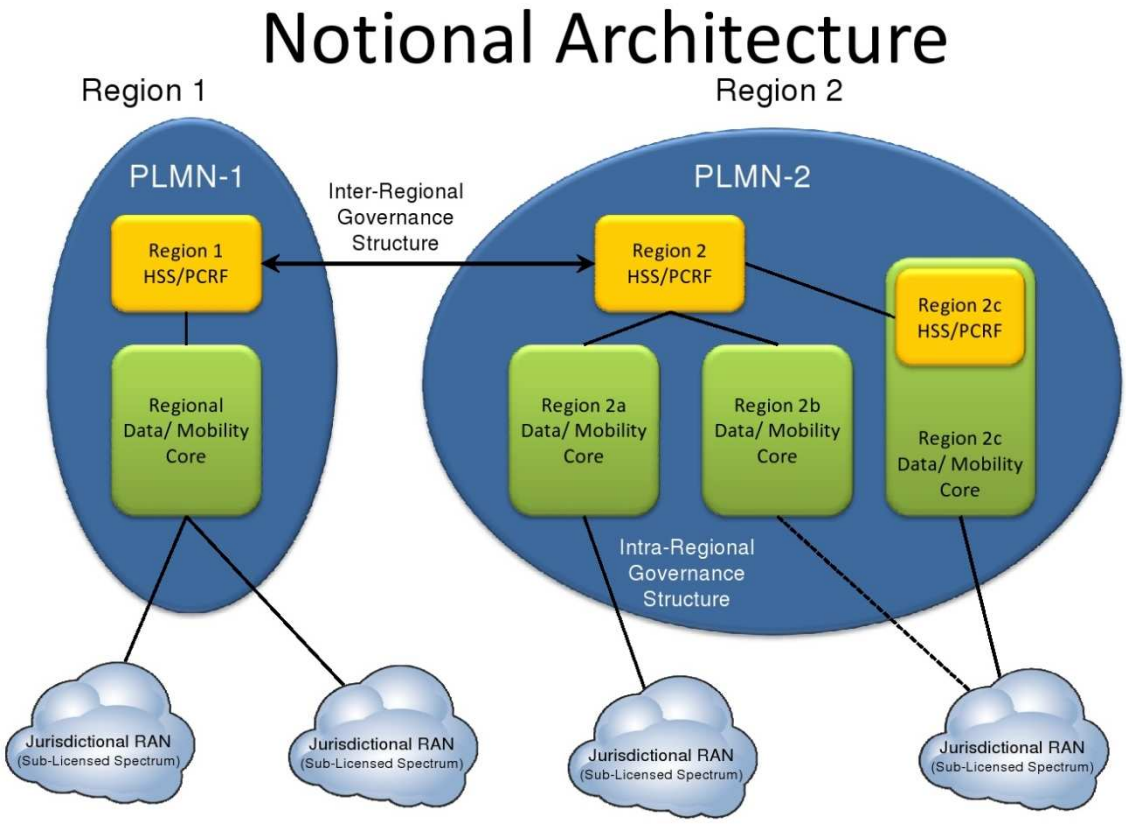
The local data transport core includes the MME, S-GW, and PDN-GW elements. Due to the substantial backhaul requirements of LTE (50Mbps – 100Mbps per site), it is generally desirable that these entities be close to the RAN and be deployed in a network architecture. The provisioning core consists of the HSS and PCRF elements. This core contains user profiles and authentication information for all users in a region. As this is a centralized function for the network, it is logical that this entity be centralized. Further, the centralization of this function provides a central entity that supplies the roaming anchor for transfer of user authentication and provisioning data for roaming users. The management of the provisioning core requires substantial governance resources, as the governing entity must manage all user configuration

information as well as roaming addresses/agreements between adjacent regions. For this reason, Harris recommends that the appropriate governance structure should take place on the state level.

In practice, each region will require a single centralized HSS provisioning core and each core will be assigned a unique PLMN ID. The other core network elements may be distributed throughout the transport network. A region may choose to have distributed local HSS for sub-region traffic, but it must "roll up" to a centralized HSS. Some regions may choose to have a single centralized core for the whole network. Other regions may choose to subdivide the network below the centralized HSS to allow for regionally distributed sub-cores. Harris believes that allowing for flexibility within the framework of a nationwide roaming architecture will promote broadband deployments that meet the unique needs and requirements of public safety entities, while maintaining the Commission's goal of ensuring nationwide interoperability.

By allowing for a flexible distributed network within a large state, the Commission will allow for a more robust architecture that meets local needs. The following diagram, labeled as Diagram 2, illustrates the Notional Regional Architecture where each region has a centralized provisioning core, but may choose to have regional flexibility below that structure. For example, if for some reason region 2b in Diagram 2 looses connection to the State Interoperability HSS due to natural disaster or terrorist attack, the local region will have the ability to continue to operate their local network during this emergency. This level of flexibility and redundancy may be very important to certain regional entities. Harris recommends that the Commission consider this regional architecture, with a centralized regional roaming entity, as a model for the nationwide PSBN's regional architecture.

Diagram 2



V. Conclusion

For the reasons set forth above, Harris continues to support Petitioners' requests for waivers, conditioned on adhering to the rules and policies established in the *Waiver Order*, including rules regarding overlapping geographic coordination. The Commission should expand its current interpretation of eligible network access to provide public safety users the ability to determine what non public safety government and quasi government organizations, who operate in support of public safety's mission, should have access to 700 MHz PSBNs on a secondary basis. Such a flexible approach is consistent with previous Commission interpretations of Section 337(f). Despite establishing rules for network deployment under the waiver process, Harris believes there is an immediate need for the Commission to move forward with a

proceeding establishing a notional nationwide architecture that establishes a regional governance structure for the roaming portion of the LTE core. The Commission should encourage the build-out of 700MHz radio access networks (RANs) by allowing for regional entities to utilize distributed data transport core(s) that may be connected to the regional interoperability core for the purpose of nationwide roaming. The Commission should define a single interoperability architecture, at the state level, and each state should be required to ensure that local or regional networks built-out within that state satisfy the uniform interoperability architecture. Harris looks forward to working with both the Commission and the public safety community to deploy an interoperable nationwide PSBN.

Respectfully submitted,

HARRIS CORPORATION
600 Maryland Avenue, S.W.
Suite 850E
Washington, D.C. 20024
(202) 729-3700

_____/s/_____

Dr. Dennis Martinez
Vice President, Broadband and Cellular Products
Public Safety & Professional Communications Business Unit

Gregory Henderson
Director, Broadband Products
Public Safety & Professional Communications Business Unit

JoAnne Dalton
Government Relations
Public Safety & Professional Communications Business Unit

Evan S. Morris, Esq.
Legal Analyst, Government Relations
Harris Corporation

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